

ABSTRACT OF THE DISCLOSURE

A method for determining a property of an insulating film is provided. The method may include obtaining a charge density measurement of the film, a surface
5 voltage potential of the film relative to a bulk voltage potential of the substrate, and a rate of voltage decay of the film. The method may also include determining the property of the film using the charge density, the surface voltage potential, and the rate of voltage decay. A method for determining a thickness of an insulating film is provided. The method may include depositing a charge on the film, measuring a surface voltage
10 potential of the film relative to a bulk voltage potential of the substrate, and measuring a rate of voltage decay of the film. The method may also include determining a thickness of the film using the rate of voltage decay and a theoretical model relating to leakage and film thickness.